

Amendments to the Drawings:

The attached drawing sheet replaces the original drawing sheet for Figure 1.

REMARKS

1. Introduction

In the Office Action mailed August 4, 2008, the Examiner examined claims 1-8 on the merits but withdrew claims 9-26 from consideration as being allegedly drawn to a non-elected invention. The results of the examination of claims 1-8 are as follows:

- The Examiner rejected claims 1 and 6 under 35 U.S.C. § 102(e) as being anticipated by or under 35 U.S.C. § 103(a) as being unpatentable over Lee et al., U.S. Patent No. 6,755,984 (“Lee”);
- The Examiner rejected claims 1, 2, 4, and 8 under 35 U.S.C. § 102(e) as being anticipated by Schaper, U.S. Patent No. 6,849,558 (“Schaper”);
- The Examiner rejected claims 1, 3, and 5 under 35 U.S.C. § 102(b) as being anticipated by Chou, U.S. Pub. No. 2002/0132482 (“Chou”); and
- The Examiner rejected claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Chou.

The Examiner objected to the title of the invention as not descriptive. The Examiner required a new title that is clearly indicative of the invention to which the claims are directed.

The Examiner objected to the drawings as failing to comply with 37 CFR 1.84(p)(4), arguing that the labels “Substrate”, “Polymer”, and “Ge” have all been used to designate the same part. The Examiner required a corrected drawing sheet.

In this Response, Applicant has canceled claims 14-26, amended the title of the invention, and submitted a corrected drawing sheet. Applicant respectfully requests reconsideration and allowance of the application, for the reasons set forth below.

2. Interview Summary

On July 8, 2008, Applicant's representative, Richard A. Machonkin, discussed the Examiner's Restriction Requirement with Examiner Brown by telephone. The Examiner had identified three groups of claims in the application: Group I (claims 1-8); Group II (claims 9-13); and Group III (claims 14-26). Applicant's representative made a provisional election of the Group I claims with traverse.

Applicant's representative traversed the Restriction Requirement by pointing out: (1) claim 9 is dependent on claim 1 and, thus, should not be classified as being in a different group of claims and (2) claims 1 and 14 are not directed to separate inventions because claim 14 is the method by which the template of claim 1 is formed.

The Examiner agreed with point (1), with the result that Group I should encompass claims 1-13. The Examiner indicated that further consideration of point (2) would be required.

3. Response to Restriction Requirement

Applicant confirms the election of Group I for examination on the merits. However, based on the agreement that was reached during the July 8, 2008 telephone interview with the Examiner, Applicant submits that Group I should encompass claims 1-13, not just claims 1-8.

Moreover, Applicant submits that requiring restriction between claims 1-8 and claims 9-13 would clearly be improper for the following reasons. In order to require restriction, the Examiner must provide (A) reasons why each invention as claimed is either independent or distinct from the others and (B) reasons why there would be a

serious burden on the Examiner if restriction is not required. See MPEP § 808. However, the Examiner has failed to provide any such reasons. With respect to requirement (A), because claim 9 is *dependent* on claim 1, claims 1-8 and claims 9-13 are clearly not independent or distinct from each other under 35 U.S.C. § 121. With respect to requirement (B), the Examiner has not even attempted to show why there would be a serious burden on the Examiner if restriction is not required.

Accordingly, Applicant respectfully requests the Examiner to examine claims 1-13 on the merits.

4. Response to the objection to the title

Applicant has responded to the Examiner's objection to the title of the invention by changing the title to "Template for use in manufacture of nanometre scale structures." Applicant respectfully submits that this title is clearly indicative of the invention to which the claims are directed, thereby overcoming the Examiner's objection.

5. Response to the objection to the drawings

Applicant has responded to the Examiner's drawing objection by submitting a replacement sheet for Figure 1. In the revised Figure 1, the label "Substrate" is not altered, but the label "Polymer" is now directed to the layer over the substrate and the label "Ge" is now directed to the layer over the polymer. This alteration of the labels corresponds to the structure described in the specification at page 2 lines 16-37.

6. Response to the claim rejections

a. Claim 1

Applicant submits that claim 1 is allowable over Lee, Schaper, and Chou for the reasons set forth below.

1. Claim 1 is allowable over Lee

Lee has at least two deficiencies with respect to the subject matter of claim 1.

The first deficiency is that Lee simply refers to a polymer and provides no teaching or suggestion that a single-phase polymer should be used, as recited in claim 1. In this regard, the Examiner appears to have misunderstood the term “phase” as used in the claims. As is well-known in the art, a polymer phase is not a simple matter of solid liquid or gas, as stated by the Examiner. Rather, a polymer phase also relates to different states of solidity. For example, the term “melting point” of a polymer relates not to a solid-liquid transition, but to a temperature at which a second-order phase transition occurs between a crystalline or semi-crystalline phase to a solid amorphous phase. Similarly, the glass transition temperature of a polymer describes the temperature at which a second order phase transition occurs from a rubbery, viscous amorphous solid to a brittle, glass amorphous solid. Further, polymers do not enter a gaseous phase as the polymer breaks down before any theoretical boiling temperature can be reached. Accordingly, a person of ordinary skill in the art would instantly understand that the term “single-phase polymer” describes a polymer that is entirely within one particular solid phase and not a mixture of different solid phases. However, no such single-phase polymer is taught in Lee.

The second and more significant deficiency is that the structure in Lee that includes the polymer layer over a substrate is in fact not a template. Rather, the template is the imprinting stamp 200 depicted in Figures 1a, 1b, 4 and 5 of Lee. The discussion of Figures 6, 7 and 8 of Lee then refers to potential issues with the stamp 200 before the remaining discussion of Lee refers to an alternative method for creating an imprinting stamp.

Although the Examiner argues that “the end product comprising textured mask layer and substrate of Lee et al is taken to be capable of functioning as a template since it is capable of imprinting a surface of a substrate such as a curable gel,” the Examiner’s argument is deeply flawed. Claim 1 does not recite something “capable of functioning as a template” but, rather, “a template.” Thus the Examiner’s “capable of functioning” argument is inapplicable. Indeed, it would appear that, according to the Examiner, anything with a textured surface is a “template.” However, it would be immediately clear to a person of ordinary skill in the art reading Lee that “the end product comprising textured mask layer and substrate of Lee et al” is not a “template” and is not intended to operate as such.

Finally, although the Examiner argues that the end product “is capable of imprinting a surface of a substrate such a curable gel,” Applicant was unable to find any reference to gels or curable materials in Lee. Therefore, the Examiner’s “capable of imprinting” argument appears to be completely unsupported.

Accordingly, Applicant submits that claim 1 is clearly allowable over Lee for at least the foregoing reasons.

2. *Claim 1 is allowable over Schaper*

Schaper has at least two deficiencies with respect to the subject matter of claim 1.

The first deficiency is that Schaper simply refers to a polymer and provides no teaching or suggestion that a single-phase polymer should be used, as recited in claim 1. In this regard, the Examiner is respectfully requested to consider Applicant's discussion of polymer phases made above with reference to Lee.

The second deficiency is that the polymer layer 610 is not textured by the induction of stress therein, as recited in claim 1. The Examiner argues that "stress is induced during the imprinting steps forming the template (610) when it is impressed by the master (600) as in any of the prior art examples provided in figures 1-4 or in figure 12 according to the Schaper invention." However, the Examiner's allegation is at odds with the disclosure in Schaper. Figure 1 shows mask based electron beam lithography, so there is no master. Figures 2 and 3 show direct application of a master to an end product with no intermediate template being formed. Figure 4 shows creation of a template from a master, but the polymer layer is formed by "spin coating or some other coating and curing technique." See col. 3, lines 36-39. Referring to the Schaper embodiments, the layer 610 is created by coating the master 600, such as by applying the polymer from solution by spin-coating. See col.7, lines 50-57 and col. 12, lines 47-49. Thus, there is nowhere in Schaper disclosed a process whereby the texturing of the surface of the polymer being created by induced stress.

Accordingly, Applicant submits that claim 1 is clearly allowable over Schaper for at least the foregoing reasons.

3. *Claim 1 is allowable over Chou*

Chou has at least two deficiencies with respect to the subject matter of claim 1.

The first deficiency is that Chou simply refers to a polymer and provides no teaching or suggestion that a single-phase polymer should be used, as recited in claim 1. In this regard, the Examiner is respectfully requested to consider Applicant's discussion of polymer phases made above with reference to Lee.

The second and more significant deficiency is that the Examiner has referred to the end product made from elements 20, 21 as a "template" when the mold 10 in Chou is the actual template. As is made clear at paragraph [0020] of Chou, the mold 10 (including both the body 11 and the molding layer 12) are made from fused quartz, glass or ceramic. The Applicant is unable to accept the Examiner's contention that the end product created by use of the mold is itself a template for at least the reasons discussed above with reference to Lee.

Accordingly, Applicant submits that claim 1 is clearly allowable over Chou for at least the foregoing reasons.

b. Claims 2-13

Because claims 2-13 depend from claim 1, Applicant submits that claims 2-13 are allowable for at least the same reasons set forth above for claim 1.

In particular, Lee and Chou do not teach or suggest a template, and although Schaper does disclose a template, the Schaper template is formed by an entirely different process to that of the claimed invention.

7. **Conclusion**

Applicant submits that the present application is in condition for allowance, and notice to that effect is hereby requested. Should the Examiner feel that further dialog would advance the subject application to issuance, the Examiner is invited to telephone the undersigned at any time at (312) 913-0001.

Respectfully submitted,

Date: November 3, 2008

By: Richard A. Machonkin
Richard A. Machonkin
Registration No. 41,962